

Remarks:

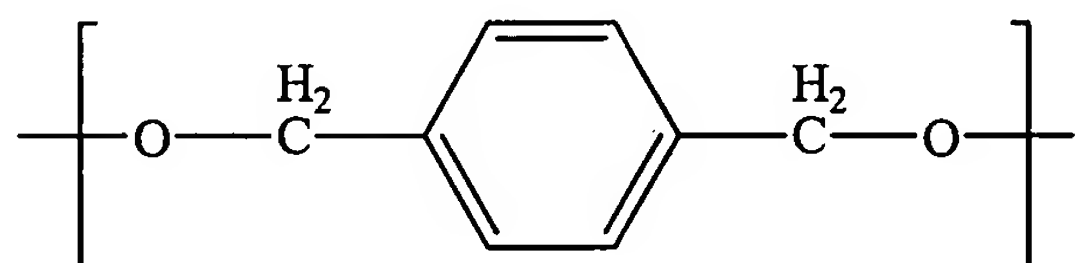
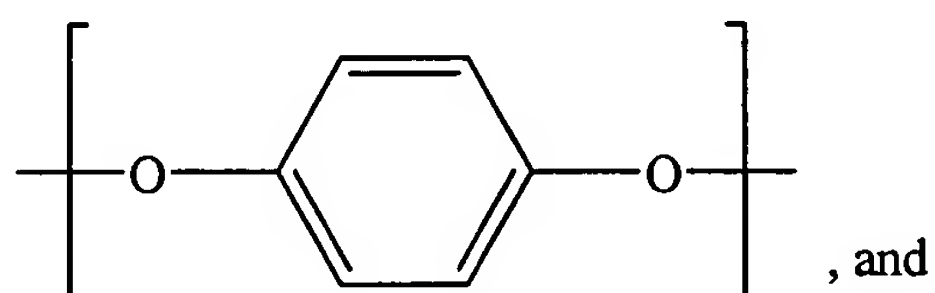
Claims 1-59 remain for consideration in this application. Claims 1-2, 4, 9, 11-13, 16, 21, 32-34, 39, and 43-45 have been amended. Claims 50-59 are newly added. The claim amendments that were made are explained in detail below.

Turning now to paragraph 3 of the Office Action, the Examiner objected to claim 4 as failing to further limit claim 1. The Examiner stated that claim 1 requires one of R¹ or R² to be a moiety of bisphenol A. The Applicant respectfully disagrees with this statement. Claim 1 does not require that either R¹ or R² be a moiety of bisphenol A. Rather, claim 1 simply lists two structures that the other R¹ or R² cannot be IF one R¹ or R² is bisphenol A. Thus, if the polymer embodiment as claimed includes one of the so-called "prohibited" structures, this would be a situation where neither R¹ nor R² is bisphenol A. It is believed that this objection should be withdrawn.

In paragraph 4 of the Office Action, the Examiner indicated that claims 5-8, 17-20, 35-37, and 46-48 were being interpreted as not requiring the choice of formula I or II. The Applicant respectfully disagrees with this interpretation and requests that the Examiner reconsider her interpretation of these claims. Independent claim 1 as written sets forth a Markush group for the possible monomer structures that could be present in the claimed polymer. That is, polymers according to this claim would comprise recurring monomers having a structure selected from the group consisting of formula (I), formula (II), and formula (III). Each of the claims depending from claim 1 recites an embodiment where the polymer includes monomers of one of the members of the Markush group of claim 1, and then the dependent claim further limits that embodiment. Thus, claims 5-7 require that the polymer include monomers having the structure of formula (II) while claim 8 requires that the polymer include monomers having the structure of formula (III). The same reasoning would apply to claims 17-20, 35-37, and 46-48. Each of these claims would be further patentable over the references of record if given this proper interpretation.

Next, the Examiner rejected claims 1-8 as being anticipated by U.S. Patent No. 6,071,662 to Carmichael et al. or U.S. Patent No. 5,554,473 to Cais et al. These rejections are quite similar so the Applicant will address them together. Each of these patents teaches a bisphenol A moiety and

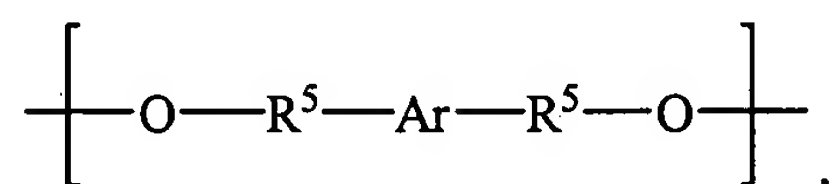
a moiety the Examiner has asserted is a derivative of bisphenol Z. Independent claim 1 has been amended to recite that, when the monomer has formula (I), R^1 and R^2 is selected from the group consisting of functional moieties of aliphatic diols, heterocyclic diols, bisphenol A, bisphenol P,



Furthermore, at least one of R^1 and R^2 is selected from the group consisting of functional moieties of bisphenol A and bisphenol P. Support for these amendments can be found on page 2, lines 18-21 and page 4, lines 1-20 of the specification as filed.

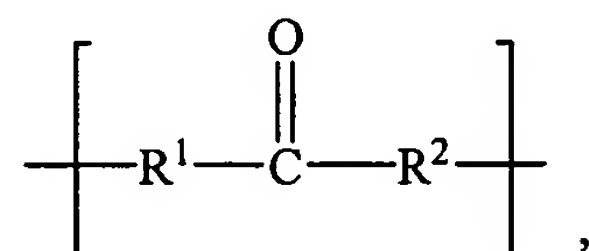
With these amendments, neither R^1 nor R^2 would ever be bisphenol Z. Therefore, claims 1-9 are not anticipated by the teachings of either the Cais et al. or Carmichael et al. patents. Furthermore, there is no teaching or suggestion in either of these references to modify the respective polymers of these references to achieve the claimed polymer.

Newly added polymer claims 51-52 have been added to recite an embodiment where one of R^1 and R^2 can be bisphenol Z. However, in this embodiment, the other of R^1 and R^2 has the formula



where R^5 is an alkyl group and Ar is an aryl group. This embodiment is also not taught or suggested by either the Cais et al. or Carmichael et al. patents.

Finally, the Examiner rejected claims 9-49 as being anticipated by the White et al. SPIE article. Independent claims 9, 21, and 39 have been amended to limit the polycarbonate member of the Markush group to polycarbonates comprising recurring monomers having a formula

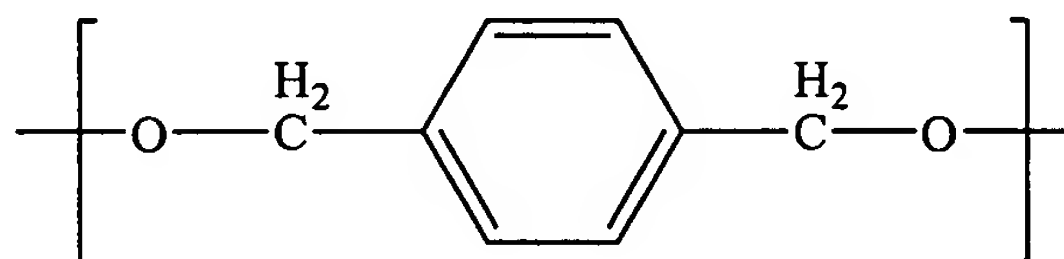


where:

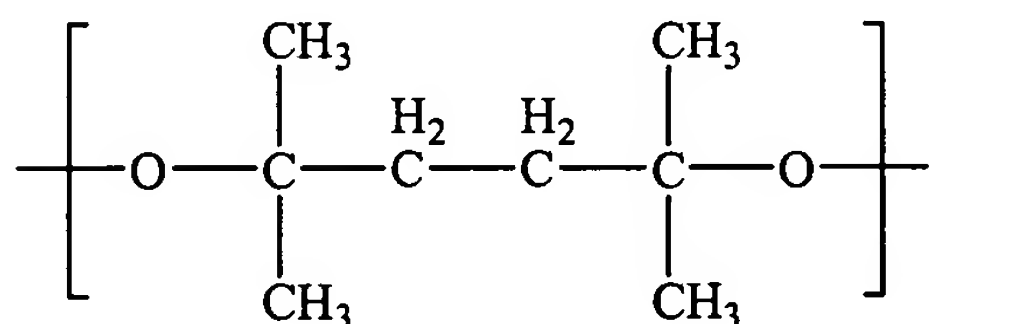
each of R^1 and R^2 is individually selected from the group consisting of functional moieties of diols;

at least one of R^1 and R^2 is selected from the group consisting of functional moieties of the bisphenols; and

when one of R^1 or R^2 is a moiety of bisphenol A, the other of R^1 and R^2 is a group other than



or



This claim amendment clearly excludes the polymer structures taught by White et al. in Figure 6 of the reference. Thus, independent claims 9, 21, and 39 are not anticipated by the teachings of White et al. Furthermore, it is respectfully submitted that there is no teaching or suggestion by White et al. to obtain the claimed composition, method of using the composition, or precursor structure including the composition because White et al. would clearly not omit the polymer structures in Figure 6. The polymer as recited in these claims is important because it achieves an anti-reflective coating composition that can be cured to yield a light-absorbent, developer-insoluble layer that will undergo a chemical change upon exposure to light so that it becomes developer-soluble.

The Applicant has also added claims 52-59, which are concerned with another embodiment that is patentable over the White et al. reference. These claims include independent claims 52, 53, and 58, and each of these claims recites that the polymer molecular weight is from about 2,000-20,000 Daltons. Support for this limitation can be found on page 9, line 7 of the specification as filed.

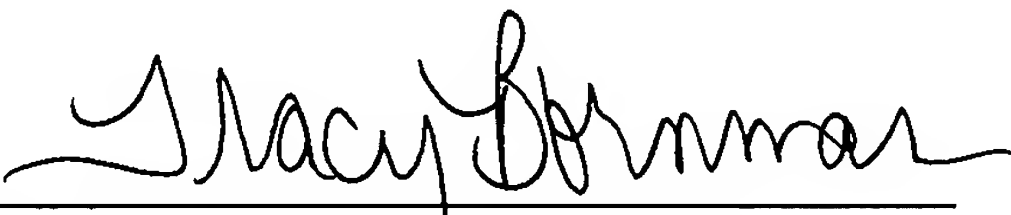
This limitation is not taught or suggested by White et al. Rather, they are concerned with using higher molecular weight polymers in order to obtain the complex, three-dimensional systems that are the focus of this reference. This is supported by the second paragraph under Section 3.1 Methods and Materials where White et al. describe the use of PPC having an average molecular weight of 50,000 and a poly(bisphenol A carbonate) starting material having an average molecular weight of 64,000. These are each much higher than the about 20,000 Dalton limit recited by claims 52-59. Furthermore, White et al. are concerned with obtaining and using polymers having a high glass transition (T_g) temperature (see, e.g., the second paragraph of the Abstract). The T_g of a polymer is related to the molecular weight of that polymer. The higher the molecular weight of the polymer, the higher the T_g of the polymer. Referring to Figure 14 and to the sentence bridging pages 251-252 of the White et al. reference, it can be seen that White et al. obtained a much higher T_g for Polymers I and II (115-125°C) than the T_g of PPC (40°C, according to second paragraph of Abstract and the third line of page 245). This would further lead one of ordinary skill in the art to conclude

that the respective molecular weights of Polymers I and II would be even higher than the 50,000 Daltons of the PPC. The claimed molecular weight range is important because the lower-molecular weight polymer allows high solubility in photoresist developers to be achieved.

The remaining claim amendments were either made to change the dependencies of the claims or to remove inconsistencies that were created with the above-described amendments.

It is believed that no further issues remain in this application. In view of the foregoing, a Notice of Allowance is respectfully requested. Any fee which is due in connection with this Statement should be applied against Deposit Account No. 19-0522.

Respectfully submitted,

By 

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